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IN THE

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1930

No. 630

DEFOREST RADIO COMPANY
Petitioner

v.

GENERAL ELECTRIC COMPANY
Respondent

Petition for a Writ of Certiorari to the Circuit Court of Appeals for the Third Circuit and Brief in Support of Petition

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IN THE

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OCTOBER TERM, 1930.

No.

DEFOREST RADIO COMPANY,

Petitioner,

v.

GENERAL ELECTRIC COMPANY,

Respondent.

PETITION FOR A WRIT OF CERTIORARI TO THE CIRCUIT COURT OF APPEALS FOR THE THIRD CIRCUIT.

To the Honorable, the Chief Justice and Associate Justices of the Supreme Court of the United States:

Your petitioner, DEFOREST RADIO COMPANY, respectfully prays for a writ of certiorari to the Circuit Court of Appeals for the Third Circuit, to review a judgment of that Court entered on November 11th, 1930. A transcript of the record in the case, including the proceedings in said Circuit Court of Appeals, is furnished herewith in accordance with Rule 38 of this Court.

I. Summary and Short Statement of the Matter Involved.

Nature of suit and decisions below.

The present suit was brought in the District of Delaware by General Electric Company for infringement of Langmuir patent #1,558,436, granted October 20, 1925, on application filed October 16, 1913.

Judge MORRIS in the District Court held the patent to be invalid on three distinct grounds (23 Fed. [2nd] 698):

1. Because of anticipation and want of invention—a question of mixed fact and law,

2. Because of prior invention—*a question of fact,*

3. Because of prior use—*a question of fact.*

Appeal was taken to the Circuit Court of Appeals for the Third Circuit, and that Court, on October 3rd, 1929, affirmed the decision of the District Court in a *per curiam* opinion *which adopted the opinion of Judge Morris,* with Judge BUFFINGTON dissenting *without opinion.*

On November 2, 1929, a petition for rehearing was filed, and was subsequently granted. In due course the case was reargued.

On November 14th, 1930, in an opinion written by Judge BUFFINGTON, the majority of the Court reversed the District Court and entered a judgment accordingly. Judge WOOLLEY wrote an extensive and carefully considered dissenting opinion ending with the following paragraph:

> "This is a long dissenting opinion. In view of the gravity of the Court's decision and its effect upon the art I make no apology for its length. I frankly

admit that it is written with the hope that it will arrest the attention of the reviewing court."

Thus, this case has been heard three times. Twice the decision has been adverse to the patent and once in its favor. Four Judges have at various times decided adversely to the patent (the District Court Judge, the majority of the Court of Appeals at the first argument, and the dissenting Judge at the reargument), while three Judges have decided in favor thereof. Stated in another way, Judge MORRIS and Judge WOOLLEY, throughout the litigation have held the patent to be invalid., Judge BUFFINGTON has adhered to the opinion that the patent is valid. Judge DAVIS has decided once that the patent is invalid and once that the patent is valid.

A substantial part of Judge MORRIS' opinion was devoted to the question as to whether Langmuir or Dr. Arnold of the Western Electric Company was the prior inventor of the subject-matter of the patent, if that subject-matter constituted an invention. To this issue nearly four weeks of trial were devoted, and a vast amount of fact and expert testimony directed.

As the first opinion of the Court of Appeals adopted Judge MORRIS' opinion as its own, and as Judge DAVIS concurred in that opinion, it necessarily follows that he at that time adopted Judge MORRIS' *findings of fact* on the priority-of-invention issue. In the present opinion of the majority of the Court, *the evidence on this issue is not discussed, nor are any reasons given for disagreeing with Judge Morris on this point.* The result therefore is, *that Judge Davis has reversed not only his own finding on the priority issue, but that of the Judge who heard and saw the witnesses, and has advanced no reasons whatever for doing so; and Judge Buffington has never delivered any opinion on this point* ***whatever.***

Subject-Matter.

The patent is directed to electron discharge devices or vacuum tubes, commonly known as "audions" and "radio tubes," and if valid, covers all radio amplifier and oscillator tubes used today in either transmitting or receiving. As this Court may remember (from *Westinghouse Electric & Manufacturing Co.* v. *DeForest*, 278 U. S. 562), the three electrode vacuum tube or "audion" is the heart and soul of the radio industry. On its use depends present day wireless communication of every kind. It is, of course, an indispensable adjunct to the signal and communication work of the Army and Navy. Without it, present day broadcast and reception of radio programs for amusement and entertainment would be impossible. The usual radio receiver used in the homes throughout the Nation employs an average of seven or eight tubes in each set. Indeed, and this fact is not disputed, without the radio tube there would be no radio broadcasting or radio industry as we know it today.

The vacuum tube is also widely used and is indispensable in present day wire communication. The first transcontinental telephony from New York to California was accomplished by its use in 1915.

The vacuum tube is likewise necessary in talking motion picture equipment, and is employed in every talking-motion-picture theatre throughout the Nation.

The three electrode radio or vacuum tube has been in use since 1906 and was invented by Dr. Lee DeForest. The DeForest patent therefor (No. 879,532) issued in 1908 and expired on February 18, 1925.

Judge WOOLLEY, in his dissenting opinion, stated the undisputed fact:

> "The audion as conceived by Fleming and improved by DeForest at once became and has ever since continued to be the basis of the modern art of transmitting sounds great distances both by wire and through the air."

On October 16, 1913, Langmuir's application for the patent in suit was filed, claiming as the invention *the process of treating the parts of a vacuum tube so as to degasify them.* In 1925, the year in which the DeForest patent expired, Langmuir's patent issued, *claiming the vacuum tube itself, an invention entirely different from that originally claimed when it was filed.* The language of the opinion of this Court, speaking through Mr. Justice ROBERTS, in *Powers Kennedy Contracting Corporation and Anthony G. Fleck* v. *Concrete Mixing and Conveying Company* (decided December 15, 1930), is literally applicable in the instant case. That language, with Langmuir and his dates substituted for McMichael, may be paraphrased as follows:

> "The Langmuir application was filed in the Patent Office on October 16, 1913. Its prosecution was most dilatory. Claims made were repeatedly disallowed, and at one time it lapsed (August 19, 1915) and had to be renewed (March 10, 1916). Radical changes were made in the statement of invention, and radically new claims were made in 1917 and expanded in 1919, again in 1921, and finally in 1925. The applicant eliminated from the scope of his invention the process of gas freeing by bombardment without heat (the subject-matter which he advanced as the invention when the application was filed)."

The patent application became involved in an interference proceeding with an application of Dr. Harold D. Arnold, an engineer of the Western Electric Company.

The Examiner of Interferences awarded priority of invention to Langmuir on a theory of *law* which is *untenable* and *was not accepted by any reviewing body or tribunal.* The Board of Examiners-in-Chief affirmed this decision, but upon grounds *entirely different* from, and *diametrically opposed to,* those relied upon by the Examiner of Interferences. The Commissioner of Patents reversed the Board and awarded priority of invention to Arnold. The Court of Appeals for the District of Columbia reversed the Commissioner, and, in a short opinion, accepted the decisions of "the lower tribunals (the Examiner of Interferences and the Board of Examiners-in-Chief) who had found for Langmuir" because, as the Court put it, those decisions "are so clear and satisfying" that it was content to rest its opinion "upon the reasoning there given," apparently quite overlooking the fact that those lower tribunals were *poles apart* in their "reasoning" and in their rulings as to the effect to be given the work done by Arnold and Langmuir, respectively.

Of course, during the interference hearings on priority, the question of whether or not a patentable invention had been made by either Arnold or Langmuir was not at issue. Nevertheless, it was necessary, in order to pass upon the question of priority, to ascertain what the supposed invention, if any, was.

As pointed out in the dissenting opinion of Judge WOOLLEY, all of the tribunals in the Patent Office, as well as the Courts, found difficulty in defining or even stating what constitutes the supposed invention of the Langmuir patent.

The Board of Examiners-in-Chief stated:

> "The invention has been referred to as a 'thing compact of glass and metal.' *That description is*

*correct as far as it goes, but that it is inadequate is evident from the fact that it applies equally well to the prior art devices."**

Again, this tribunal stated—

"Thus the count distinguishes from the prior art not by features of structure but by a characteristic which is manifest while the device is operating at or above a certain voltage."

The Commissioner of Patents, in his opinion, stated—

"It will be seen then that the present invention lies not in discovering or producing something new, but in perceiving the practicability of scientific facts known in the laboratory and in making practical useful devices embodying the scientific laws known in the laboratory."

The Examiner in the Patent Office, in Paper No. 3 (his rejection of February 28, 1914, found on pp. 677, 678, Vol. VI, Rec.) stated:

"If applicant's device is an improvement over the (prior art) reference he should define the difference **by structural limitation."**

The answer made by applicant, to this requirement of the Examiner, is set forth in the amendment dated April 30, 1914 (Rec. Vol. VI, p. 685)—

"The 'structural limitations' in this case are to be found in the difference of vacuum."

Respondent, in its reply brief before the Circuit Court of Appeals (p. 7), stated—

"Defendant labors *unnecessarily* to prove that *the only structural difference between the invention*

* Italics in this Petition and Brief are ours.

> *and the audion is simply one of vacuum*—a vacuum which, as the District Court fully realized, must be maintained in operation, and which can only be maintained if all parts in the tube, particularly the anode, are specially treated to free them of gas. *We have never contended otherwise. It was so stated in the Patent Office, again in the Court below; to set any doubts at rest, we state it again now.*"

From the foregoing it will be readily seen that the invention of the Langmuir patent, as advanced by its exponent, is the identical old device of DeForest, assertedly differing therefrom, *only in the degree of vacuum therein.*

Every vacuum or radio tube made or in use today (with the exception of a few *detector* tubes which, for special purposes, operate best with a *low* degree of vacuum) comes within the scope of the Langmuir patent as adjudicated.

The present majority opinion of the Court below commented:

> "The simple fact is that we see such a tube in *universal* use today."

The effect of this adjudication, therefore, is to give to the Radio Corporation of America (through its contractual relations with the General Electric Company, see 24 Fed. (2) 565) *the absolute monopoly of the entire vacuum or radio tube industry for 12 years to come, not withstanding that the radio vacuum tube has been in use since 1906.* In view of the fact that the vacuum tube is a necessary and indispensable part of radio transmitting and receiving apparatus, it likewise gives to the Radio Corporation a similar monopoly of the radio apparatus industry of the United States.

Thus, there is established a monopoly of a vast, modern industry by means of a patent of such doubtful validity that in two of three adjudications it has been held to be invalid—a patent, moreover, which, by its very terms, covers DeForest audions used in commerce before the Langmuir application was filed in the Patent Office, and which, at best, distinguishes, if at all, from millions of vacuum tubes that have been manufactured under expired patents, and used in the various industries, by a difference in *the degree of vacuum* within the tube.

As Judge WOOLLEY, in his dissenting opinion, pointed out:

> "The Langmuir patent now completely covers the field occupied by the audion of the expired DeForest patent, and will, on the decree of this Court, continue to cover it for twelve years more; *hence the importance of this litigation.*"

II. Reasons Relied Upon for the Granting of a Writ of Certiorari.

The discretionary power of this Court is invoked upon the following grounds:

(1) Because of the sharp conflict of opinion of the Judges in the Courts below in a case of very great and far reaching economic, industrial and public importance, involving as it does the monopolistic control of one of the greatest industries of the country, and an article of commerce used by millions of people.

2. Because the *present* majority decision of the Court of Appeals has reversed the dispositive findings of fact of the Trial Court, on an issue to which nearly four weeks of the trial were devoted, and which was dependent on conflicting testimony of witnesses who testified in open

court, and is thus in conflict with the rule stated by this Court in *Adamson* v. *Gilliland*, 242 U. S. 350. Moreover, the opinion of the present majority gives no reason whatever for disagreeing with Judge MORRIS' finding of fact on that issue, and does not even refer to the evidence on that point.

3. Because one of the Judges of the Court of Appeals, who once adopted the opinion of the Trial Court as that of his own, and hence accepted the dispositive findings of fact of the Trial Court, on the rehearing changed his opinion without expressing any reason therefor, and concurred in an opinion which makes no reference to the subject-matter of such dispositive facts or the decision of the Trial Court with reference thereto.

4. Because the present decision of the majority of the Court of Appeals establishes a patent monopoly for necessary articles of commerce, viz. vacuum tubes, the patents for which have expired, and from which old constructions the patented thing assertedly differs only in the degree of vacuum in the tube, thereby deciding an important question of patent law (finding patentable novelty for a mere difference in degree) in a way that is untenable and in conflict with a long line of decisions of this Court.

5. Because Judge WOOLLEY of the Court of Appeals virtually suggests, in the concluding paragraph of his dissenting opinion, that this Court review the case because of its importance to the public.

WHEREFORE, your petitioner respectfully prays that a writ of certiorari be issued under the seal of this Court directed to the United States Circuit Court of Appeals for the Third Circuit, commanding said Court to certify and send to this Court, on a day to be designated, a full

and complete transcript of the record and all proceedings of the Circuit Court of Appeals had in this cause, to the end that this cause may be reviewed and determined by this Court; that the judgment of the Circuit Court of Appeals be reversed, and that Petitioner be granted such other and further relief as may seem proper.

THOMAS G. HAIGHT,
SAMUEL E. DARBY, JR.,
Counsel for Petitioner.

Dated, New York, N. Y., Jan. 6, 1931.

State of New York,)
County of New York,) ss.:

SAMUEL E. DARBY, JR., being first duly sworn, did depose and say:

That he is of counsel for Petitioner herein; that he prepared the foregoing petition in collaboration with the other counsel for Petitioner in the case, and that the allegations thereof are true as he verily believes.

SAMUEL E. DARBY, JR.

Subscribed and sworn to before me)
this 6th day of January, 1931.)

ROSE A. BATTERMAN,
Notary Public,
New York County.
N. Y. Co. Clk's No. 64, Reg. No. 2B46.
Commission expires March 30, 1932.

BRIEF FOR PETITIONER IN SUPPORT OF PETITION FOR WRIT OF CERTIORARI.

The Opinions of the Courts Below.

The opinion of the District Court is found in 23 Fed. (2nd) 698. The affirmance of the District Court's decision by the majority of the Circuit Court of Appeals for the Third Circuit was on an unreported *per curiam* opinion which adopted the opinion of the Court below. The opinion of the majority of the Circuit Court of Appeals for the Third Circuit, which resulted in the judgment which the present petition for writ of certiorari seeks to have reviewed, is unreported, but is reproduced in the record filed herewith.

Jurisdiction.

The grounds of jurisdiction are as follows:

1. The judgment to be reviewed was dated November 11th, 1930.

2. The judgment was rendered in a suit in equity brought under the patent statutes to determine the issues of validity and infringement of Letters Patent of invention issued by virtue of Section 4886 R. S.

3. The statute under which jurisdiction is invoked is Section 240 (a) of the Judicial Code, 28 U. S. C. No. 347, as amended by the Act of February 13, 1925.

4. Some of the cases believed to sustain the jurisdiction are *Alexander Milburn Co.* v. *Davis Bournonville Co.*, 270 U. S. 290; *White* v. *Mechanics Securities Corp.*, 269 U. S. 283; *Carbice Corporation* v. *American Patents Development Corporation, et al.*, 281 U. S. 711, in which writs of certiorari were granted without conflict between different Circuit Courts of Appeal.

Statement.

The facts, so far as this application is concerned, are sufficiently stated in the petition.

Specification of Errors.

The errors which petitioner will urge, if the writ of certiorari is allowed, are that the present majority of the Circuit Court of Appeals for the Third Circuit erred,

1. In reversing the decree of the District Court and holding the Langmuir patent No. 1,558,436 to be valid and infringed;

2. In failing to hold that the Langmuir patent No. 1,558,436 is invalid because of anticipation and want of invention;

3. In failing to hold the Langmuir patent No. 1,558,436 invalid because of prior invention by H. D. Arnold;

4. In reversing the dispositive findings of fact of the Trial Court, based on conflicting testimony, as to prior invention by H. D. Arnold;

5. In failing to hold the Langmuir patent No. 1,558,436 invalid because of prior knowledge and use by Lee DeForest and Federal Telegraph Company;

6. In reversing the dispositive findings of fact of the Trial Court, based on conflicting testimony, as to prior knowledge and use by Lee DeForest and Federal Telegraph Company.

Summary of Argument.

The points of the argument follow the reasons relied upon for the allowance of the writ of certiorari (*supra*, p. 9).

ARGUMENT.

Manifestly, it would not be feasible, within the reasonable limits of a brief in support of a petition for a writ of certiorari, to discuss the *merits* of a case of this magnitude and importance. Consequently, for the purposes of this brief, *on the question of the merits of the case, we will rely upon the opinions of Judge Morris and Judge Woolley in the Courts below.* For the convenience of the Court, we have printed these opinions in a separate pamphlet, copies of which are presented with this petition and brief.

The following part of the brief will, therefore, be devoted to a discussion of the "special and important" reasons why this Court should grant a writ of certiorari and review the case on its merits.

1. The case presents a sharp conflict of opinion of the Judges in the Courts below in a case of very great and far reaching economic, industrial and public importance, involving as it does the monopolistic control of one of the greatest industries of the country, and an article of commerce used by millions of people.

According to figures published by the trade journal "Radio Retailing" of March, 1930 (a McGraw-Hill publication), 69,000,000 vacuum tubes were sold throughout the United States for radio receivers in 1929, the retail purchase price for which was $172,500,000. Radio tubes are

necessary devices for the operation of the 4,438,000 radio broadcast receivers which were sold in 1929 (according to the same authority) at retail prices totaling $592,068,000. The same publication, on its statistics in the trade, estimated the business for 1930 would be 84,000,000 tubes and 16,000,000 radio receiving sets.

According to the same authority there are approximately 150 established manufacturers of vacuum tubes each employing from 200 to 1,000 employees.

The Langmuir patent purports to cover, and the present majority decision of the Court of Appeals for the Third Circuit decrees that it does cover, every one of the above vacuum tubes made for every one of the above radio receiving sets. Respondent itself has asserted that there is no vacuum tube in use or being manufactured today that does not embody the invention of the Langmuir patent.

The use of vacuum tubes is necessary and indispensable in all telephone systems where amplifiers or repeaters are required, as they are in all long distance telephony.

The use of vacuum tubes is likewise necessary and indispensable in all talking-motion-picture reproduction equipment, in use in every talking-motion-picture theater in the United States.

All of the foregoing industries *depend* upon the vacuum tube for successful operation. The control of the vacuum tube gives a virtual control of these and other industries. The Langmuir patent, as construed by the present majority of the Court of Appeals, gives that control.

The effect of the decision of the present majority of the Court of Appeals is to close the doors of every vacuum tube manufacturer in the United States that does not obtain a license under the Langmuir patent, and throw the thousands of workmen in their plants out of employment. It is recognized that this fact, alone, furnishes no

justification for the appropriation of a patented invention without license of the patent owner. *It does, however, furnish a cogent reason for the review and final determination of the validity of a patent of such great economic, public and industrial importance, and this is especially so when there is taken into consideration the sharp conflict in opinion of the Judges below, and the fact that the trial judge, who heard and saw the witnesses, has been reversed on a question of fact without any reasons being assigned for the reversal, and when one judge, who has now voted to reverse, at one time adopted the opinion of the trial judge as his own.*

It is respectfully submitted, therefore, that the validity of a patent of such industrial and public importance, affecting an article of commerce used by millions of people, should not be permitted to rest upon the decision of two judges, where two other judges have entertained a different view, and *where one of the judges now sustaining its validity once considered it invalid.*

2. The *present* majority decision of the Court of Appeals has reversed the dispositive findings of fact of the trial court, on an issue to which nearly four weeks of the trial were devoted, and which was dependent on conflicting testimony of witnesses who testified in open court, and is thus in direct conflict with the rule stated by this Court in *Adamson* v. *Gilliland*, 242 U. S. 350.

As we have pointed out (*ante*, p. 2), two of the three reasons advanced by the trial judge for his conclusion of invalidity of the patent were:

(a) If the subject-matter of the patent did constitute a patentable invention, it was first invented by Dr. Arnold and not by Langmuir, the patentee; and

(b) Because of prior use by Dr. Lee DeForest and the Federal Telegraph Company of California.

Each of these conclusions of the trial court was dispositive of the case, and both thereof were based on conflicting testimony in the case.

(a) ***Priority of Invention:***

The trial of the cause consumed more than four weeks, extending from October 11, 1926, until November 11, 1926. Nearly four weeks of this time were consumed in the taking of testimony and evidence *bearing exclusively on the fact issue of priority of invention.*

On this issue petitioner presented the testimony, in open court, of the following witnesses:

Dr. Harold D. Arnold,
Dr. Otto B. Blackwell,
Dr. Edwin H. Colpitts,
Col. Frank B. Jewett,
Dr. Marvin J. Kelley,
Dr. Robert A. Millikan,
Dr. Joseph A. Becker,
Mr. George E. Folk.

Respondent, likewise, on this issue presented the testimony of the following witnesses:

Dr. Ernst F. Alexanderson,
Dr. William D. Coolidge,
Mr. John V. L. Hogan,
Dr. Irving Langmuir,
Dr. William C. White,
Mr. Fairfax Bayard.

Thus, on a sharp issue of fact—priority of invention—petitioner presented *eight* witnesses, and respondent

presented *six* witnesses. The issue of fact thus raised was determined by the trial court, after seeing and hearing the witnesses testify, and observing their demeanor and attitude while testifying. The trial court held that if the subject-matter of the Langmuir patent was patentable at all, it was first invented by Arnold and not by Langmuir.

The rule of law applicable to the findings of fact by a trial court is stated by Mr. Justice HOLMES in *Adamson v. Gilliland*, 242 U. S. 350, in the concluding paragraph of the opinion at page 353, as follows:

> "Considering that a patent has been granted to the plaintiff, the case is preeminently one for the application of the practical rule that so far as the finding of the Master or Judge who saw the witnesses depends upon conflicting testimony or upon the credibility of witnesses, or so far as there is any testimony consistent with the finding, it must be treated as unassailable.' Davis *v.* Schwartz, 155 U. S. 631, 636."

In the case at bar, there was a conflict of testimony and the necessity of the trial judge passing upon the credibility of witnesses. Not only was there testimony "consistent with the finding" of the trial judge but, as a reading of his opinion will demonstrate, no other finding could reasonably have been made.

The present majority decision of the Court of Appeals for the Third Circuit has reversed the finding of fact of the trial judge, which finding alone was dispositive of the litigation, *without referring to the subject in its opinion, and hence without giving any reason whatever for so doing.*

(b) *Prior Use:*

The Langmuir patent is drawn to cover not only the structures of the expired DeForest audion patent 879,532, but also that of the still earlier expired patent to Fleming No. 803,684, both of which are for structures which have been continuously in use since 1906. The only asserted difference is that the vacuum tube, alleged to have been invented by Langmuir, has had sufficient air extracted therefrom so that 40 volts or more may be used in the plate circuit thereof without harmful effects due to the presence of the residual gas (see for example claim 26, Vol. 4, p. 9). In other words, the patent purports to cover any vacuum tube which can function properly when using 40 volts or more.

It was conclusively proved in the Court below, through the following witnesses: Mrs. A. W. F. Beck, Ralph Hyde, Palmer Hewitt, Leland B. Clark, G. E. Lamont, Ralph Beal, Austin Y. Tuel, James O. Watkins, Harold Lee Rodman (and the exhibits offered in evidence during the taking of such depositions), that the Federal Telegraph Company (a commercially operating company engaged in the commercial traffic of radio messages between San Francisco, Honolulu, and elsewhere) was using tubes, supplied it by Dr. DeForest, which had been especially pumped as free of gas as the pumping equipment then available permitted, and which tubes had been used with as high as 54 volts and 67½ volts, which amount of voltage was possible *only* because the tubes had been highly evacuated of gas to permit the use of such voltage. Under the well recognized principle of patent law,—that which infringes if later, anticipates if earlier,—such use by DeForest and the Federal Telegraph Company of California, being prior to any date claimed, even for con-

ception of the invention, by Langmuir, establishes a second independent bar to the validity of the patent. And the patent was held to be invalid for this reason by Judge MORRIS in the District Court, the Court of Appeals at the first hearing, and by Judge WOOLLEY on rehearing.

In direct conflict with these nine witnesses, respondent offered the conflicting testimony of John V. L. Hogan and Dr. Irving Langmuir, the patentee.

Here, again, the finding of fact by the trial judge has now been reversed by the present majority decision of the Court of Appeals without mention of the evidence or, indeed, of the subject, in its opinion, and without reason, and thus the present majority decision is in conflict with the rule stated by this Court in *Adamson* v. *Gilliland*, *supra*.

3. One of the Judges of the Court of Appeals, who once adopted the opinion of the Trial Court as that of his own, and hence accepted the dispositive findings of fact of the Trial Court, on the rehearing changed his opinion without expressing any reason therefor, and concurred in an opinion which makes no reference to the subject-matter of such dispositive facts or the decision of the Trial Court with reference thereto.

Judge DAVIS on the first appeal *accepted* the dispositive findings of fact of the *trial court* when he concurred in the *per curiam* opinion of Judge WOOLLEY. On the rehearing he has changed his opinion *without any expressed reasons* for reversing the findings of fact by the trial court, *and has concurred in an opinion which does not mention them or their subject-matter.* It is submitted that this fact alone warrants the review of the case by this Court *in view of the fact that the disposition of this*

important litigation has now turned upon this changed opinion of this one Judge who gives no reason for his change.

4. The present majority decision of the Court of Appeals establishes a patent monopoly for necessary articles of commerce, viz. vacuum tubes, the patents for which have expired, and from which old constructions the patented thing assertedly differs only in the degree of vacuum in the tube, thereby deciding an important question of patent law (finding patentable novelty for a mere difference in degree) in a way that is untenable and in conflict with a long line of decisions of this Court.

As hereinbefore stated, the two and three electrode vacuum tubes were invented respectively by Dr. Fleming and Dr. Lee DeForest and have been in use since 1906. The patents therefor, Nos. 803,684 and 879,532, expired on November 7, 1922, and February 18, 1925, respectively.

The Langmuir patent is directed to these same evacuated devices, differing therefrom *only in the degree of evacuation.*

The Fleming patent (Rec. Vol. 5, p. 158), states (line 54):

> "I have discovered that if two conductors are enclosed in a vessel *in which a good vacuum is made,* one being heated to a high temperature, the space between the hot and cold conductors possesses a unilateral electric conductivity and negative electricity can pass from the hot conductor to the cold conductor, but not in the reverse direction."

Again, in the Fleming patent, with more specific reference to the *degree of vacuum* within the tube of the device, the patent states (line 96):

> "As *a very high vacuum should be obtained* in the bulb *a* and as a considerable quantity of air is occluded in the conductors, *these should be heated when the bulb is being exhausted.*"

Thus, the Fleming device is the same electron discharge device as that of the Langmuir patent. It is a *vacuum tube* device, and the degree of vacuum is stated by the Fleming patent to be "*a very high vacuum.*"

Likewise, the DeForest Patent No. 879,532 (Rec. Vol. 4, p. 274), for the three-electrode tube, states (p. 1, line 44):

> "D represents *an evacuated vessel*, preferably of glass, * * *."

Similarly, each claim of the patent describes the device as "*an evacuated vessel.*"

The tube of the Langmuir patent *admittedly* has no structural difference from the old Fleming and DeForest tubes except in the asserted *degree of vacuum.*

The present majority of the Circuit Court of Appeals proceeded, *solely by its own argument*, to the conclusion that the Langmuir device, with its *higher* degree of evacuation, operated on a principle different from the principle of operation of the identical devices of the prior art. We say that the Court proceeded to such conclusion "solely on its own argument," because of the fact that not only is there no support in the record for the conclusion reached, but indeed, the record is diametrically opposed thereto. In addition to the instances so clearly pointed out in the dissenting opinion, we call attention to the fact that it is established in the record of this case by the testimony of respondent's own expert, Hogan (Vol. 1, Rec. pp. 113 to 120, inclusive), that when evacuated electron discharge devices have any air or gas enclosed therein (and they *always* have some) the device operates due to "electron flow" and "gas

ionization." If more air or gas is present the relative proportion of gas ionization, with respect to electron flow, is *increased*. Conversely, if more gas or air is extracted, the relative proportion of gas ionization, with respect to electron flow, is *decreased*. However, *always*, at *all* times, *the principle of operation of the device is the same*. Respondent's expert Hogan said so in so many words. He testified (Vol. 1, Rec. p. 118), that, with respect to an electron discharge device with a considerable amount of gas, and one with exceptionally little gas,

> *"the ultimate effects are of the same kind, and I cannot agree that 'they work on entirely different principles.'"*

Thus, the only difference between the device of the Langmuir patent and the prior devices of the art is one in *degree of vacuum*, without any difference in principle of operation. On this point, we earnestly invite the attention of the Court to the dissenting opinion of Judge WOOLLEY where this subject is fully and, as we think, conclusively covered.

This Court, in a long line of decisions, has consistently held that mere variations of degree are not patentable.

Munson v. *New York*, 24 U. S. 601;
Milligan & H. Glue Co. v. *Upton*, 97 U. S. 3, 6;
Pearce v. *Mulford*, 102 U. S. 112;
Guiduet v. *Brooklyn*, 105 U. S. 550, 552;
Slawson v. *Grand Street*, 107 U. S. 649;
Estey v. *Burdett*, 109 U. S. 633, 640;
Burt v. *Evory*, 133 U. S. 349;
French v. *Carter*, 137 U. S. 239;
Ansonia Brass & Copper Co. v. *Electrical Supply Co.*, 144 U. S. 19;
Belding Manufacturing Co. v. *Challenge Corn Planter Co.*, 152 U. S. 100.

Therefore, the opinion of the present majority of the Court of Appeals for the Third Circuit is in direct conflict with the decisions of this Court, and with the fundamental principle of patent law established thereby. In effect, the present majority opinion of the Court of Appeals establishes *new* patent law, quite radical in its nature and effect upon the judicial administration of patents.

5. Judge Woolley of the Court of Appeals virtually suggests, in the concluding paragraph of his dissenting opinion, that this Court review the case because of its importance to the public.

Judge WOOLLEY evidently fully recognized the great interest of the public in the litigation, and the far reaching importance of the latest decision of the majority of the Court of Appeals.

In his dissenting opinion, he observed:

> "The Langmuir patent now completely covers the field previously occupied by the audion of the expired DeForest patent, and will, on the decree of this Court, continue to cover it for twelve years more; *hence the importance of the litigation.*"

His dissenting opinion, moreover, evidences a conscientious and exhaustive study of an extremely voluminous record involving complicated technical questions. It shows a clear comprehension of all of the points involved, and constitutes a scientifically accurate discussion thereof that has seldom been equalled in judicial consideration of complicated technical matters.

The closing paragraph of his opinion, which we regard as an expression of a strong conviction that the case

should be reviewed by this Court, is here again quoted for convenience:

> "This is a long dissenting opinion. In view of the gravity of the Court's decision and its effect upon the art I make no apology for its length. *I frankly admit that it is written with the hope that it will arrest the attention of the reviewing Court.*"

CONCLUSION.

From the foregoing it appears that the present majority of the Circuit Court of Appeals for the Third Circuit has now rendered a decision in conflict with its own previous decision, with conflicting opinions of the members of its own Court, and in conflict with the opinion of the trial court, and in conflict with controlling decisions of this Court. The case is of great public, economic, and industrial importance. The decision has seriously prejudiced petitioner, and if not reversed will compel it to discontinue the manufacture of the same devices that it and its predecessors have manufactured and sold since 1906, and which manufacture constitutes virtually its entire business.

It is earnestly urged, therefore, that the petition be granted.

Respectfully submitted,

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